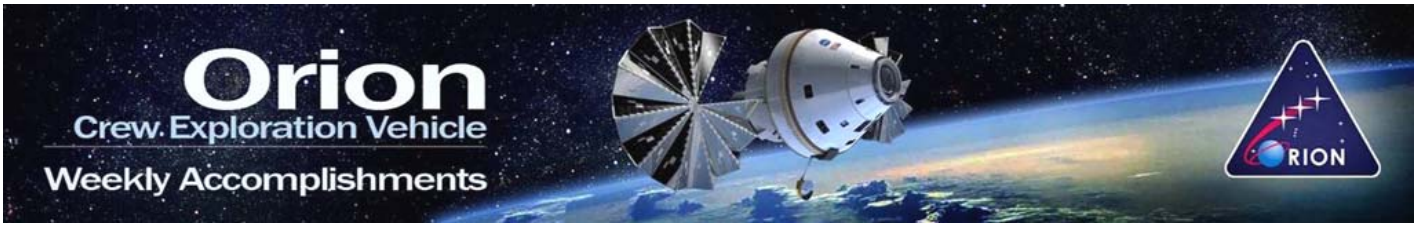
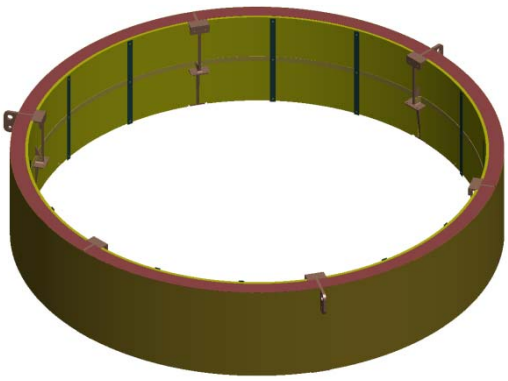


Week ending July 11, 2009

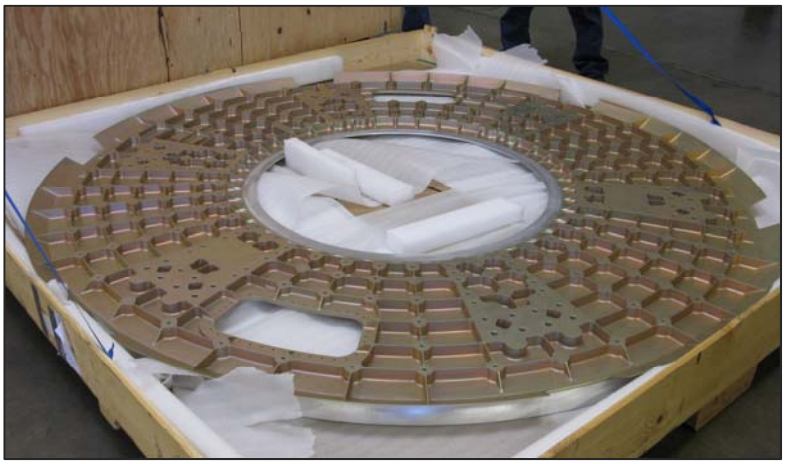
The CEV Aerosciences/Aerodynamic team completed the 24-AA Transonic LAT Jettison test. The test took place in the Propulsion Wind Tunnel Facility at the Arnold Engineering Development Center, in Tullahoma, TN (Photo right). The test obtained data to develop the transonic (Mach 0.2 to 1.2) separation aerodynamic environments between the Launch Abort System (LAS) and the Crew Module during a Mode 1 abort, in particular, when the LAV is flying heat-shield forward, and the Jettison Motor ignites to separate the LAS from the CM. The test data is planned to be folded into the v0.54 database update for the beginning of DAC4.

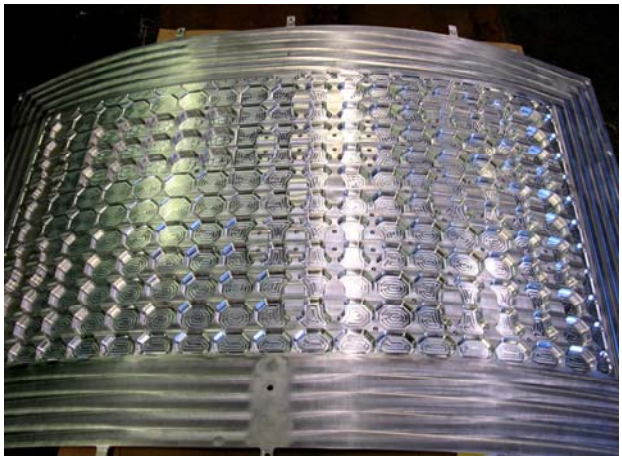
The CAP Aerodynamic team completed the AR-103 CART3D supersonic reorientation phase Computational Fluid Dynamics (CFD) task. This CFD includes both basic and Attitude Control Motor Jet Interaction (ACM JI) predictions, consisting of approximately 1700 cases. The data will be used to refine the database for the v0.54 update for DAC4.

All major Low Impact Docking System Ground Test Article components were simplified to ease the manufacturing processing required. Much of the mass and the center of gravity (CG) adjustability were removed from the design due to the low risk associated with the published CG tolerances and the increase of the mass tolerance. There is still some “free” adjustability within the latch mass simulator design due to the inherent connection design with no additional design or manufacturing complexity. The current total LIDS mass matches the target (582 lbs).

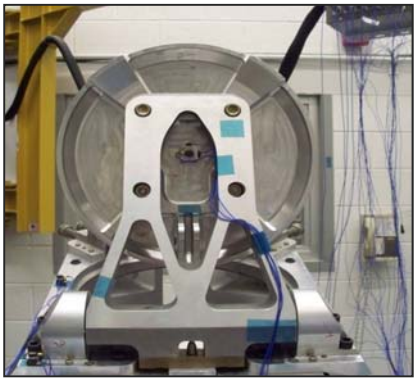


The updated Low Impact Docking System MMOD concept (#3) design is complete. This concept removed every other main support bracket to reduce manufacturing time and potentially save weight. A bent C-channel will be used on the top and bottom as a support bracket to the outside shield and MMOD blanket. The current design concept weight is within the target (without fasteners) with more work to be performed to identify potential areas for additional weight reduction. The blankets will attach to the upper and lower C-channels and have reinforcement brackets behind the blanket. Pockets where added to the main support bracket to reduce weight and allow for a more efficient design. Performance assessments on this design approach are ongoing.





The Orion Ground Test Article bulkhead (Photo above left) and barrel panel (Photo above right) were completed at AMRO Fabrication Corporation in California and are in route to the Michoud Assembly Facility in Alabama for welding.



Pad Abort-1 T-0 doors functional and thermal testing and hi-cycle thermal testing is complete (Photos left).

The Ascent Abort 1 crew module heat shield load sensor cells were installed and the Langley Research Center team completed the leveling procedure of the heat shield assembly (Photo above). Vertical supports will be installed the week of July 13-17 and will continue for 1 to 2 weeks. Following, the required vertical stanchions will be installed to prepare for the bulkhead integration and gusset installation.

Construction of the ascent abort gantry is complete (Photo right). The final work included installation of the minimal gantry electrical (aircraft warning lights, lightning rods, and grounding), and the load testing of the work platforms and inserts.

Communications and Public Engagement

The Orion Launch Abort System is featured in this week's edition of MIT's *Technology Review* online magazine. The story includes interviews with Orbital's Henri Fuhrmann and NASA's Kevin Rivers and David McGowan. http://www.technologyreview.com/computing/23002/.

FOX NEWS will air "Apollo 11: One Small Step to Our Future" this Friday, July 17 at 10 p.m. ET/9 p.m. CT. during "On the Record" hosted by Greta Van Susteren. The program will include interviews with various NASA and contractor professionals working on the country future space exploration initiatives through the Orion and Constellation programs. http://www.foxnews.com/story/0,2933,532321,00.html

Lockheed Martin's Ken Reightler will do a live national radio interview on Monday morning, July 20, at 9:30 a.m. CT/10:30 ET with Jack Roberts of CRN Digital Networks based out of Sunland, California.
http://www.crni.net/default.aspx?module=profiles&eid=2061&pid=0

NASA Edge has just posted their latest online feature of Orion. The program features interviews with Orion team members at the Exploration Development Lab in Houston as well as the Orion simulators on site at NASA's Johnson Space Center. You can now view the web story and vodcast at:
http://www.nasa.gov/multimedia/podcasting/nasaedge/index.html

The Orion team participated at a NASA event at the Houston Museum of Natural Science on Friday, July 17. The Houston Museum of Natural Science premiered "Dawn of the Space Age," a full dome planetarium movie that highlights the greatest moments in human spaceflight. To commemorate the 40th anniversary of Apollo 11 and this event, NASA gave the museum guests a glimpse into the next steps in human spaceflight. Cosmo, one of NASA's inflatable astronauts, greeted visitors as they check out models of Constellation's Orion crew module, Ares rockets and Altair lunar lander. Other NASA activities allowed visitors to participate in a spacesuit demo, go on a virtual tour of the International Space Station and learn about Orion's parachute systems. Lockheed Martin's 1/4th scale model of Orion will also be temporarily hung in the museum's grand hallway. JSC Employees can get discounted tickets to the museum's showings at http://starport.jsc.nasa.gov/EmployeeDiscount/LeisureAndTravel/index.cfm.
For more information on the movie, go to: http://www.hmns.org/see_do/planetarium/coming_soon.asp